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10/826,179	04/16/2004	Mi Jung Yang	5895P056	9770

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EXAMINER
MAHMOUDZADEH, NIMA

ART UNIT	PAPER NUMBER
4177	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/826,179

Applicant(s)

YANG ET AL.

Examiner

Nima Mahmoudzadeh

Art Unit

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-10 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 04/16/2004 and 01/30/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 10 equation [1] and also page 12 equation [3], statement "amount of remaining bandwidth of Pr" is being used both as one of the variables (right side of the equation) and also the result in each equation [1] and [3] (left side of the equation). Examiner's suggestion is to replace statement "amount of remaining bandwidth of Pr" on the left side of the equation with "change bandwidth information of Pr". Appropriate correction is required.

Claim Objections

1. Claims 8 and 10 are objected to because of the following informalities: The claims must be in one sentence form only.

Regarding claim 8, the period on line 7 should be replaced with " : " and period should be added at the end of the claim. And further in claim 8, the statement "amount of remaining bandwidth of Pr" is being used both as one of the variables (right side of the equation) and also the result in the equation (left side of the equation). Examiner's suggestion is to replace statement "amount of remaining bandwidth of Pr" on the left side of the equation with "change bandwidth information of Pr".

Regarding claim 10, the period on line 4 should be replaced with " : " and period should be added at the end of the claim. And further in claim 10, the statement "amount of remaining bandwidth of Pr" is being used both as one of the variables (right side of the equation) and also the result in the equation (left side of the equation). Examiner's

suggestion is to replace statement "amount of remaining bandwidth of Pr" on the left side of the equation with "change bandwidth information of Pr".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 10 recites the limitation " M' " in line 5. There is insufficient antecedent basis for this limitation in the claim. Limitation " M' " has not been defined in dependent claims 10, 9 and independent claim 1.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-6, and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Zhang et al. (US Patent Publication No. 2003/0028641)

Regarding claim 1, Zhang et al. teach a method of performing adaptive connection admission control in consideration of input call states in a Differentiated Services (DiffServ) network, the DiffServ network including a bandwidth broker, a plurality of ingress and egress edge nodes and a plurality of core nodes, the method comprising the steps of:

a) a corresponding ingress edge (Fig. 1, 14) node performing connection admission control (Paragraph [0030]) for a new connection within an amount of bandwidth initially allocated to each of paths between the ingress and egress edge nodes (Paragraph [0030]);

b) comparing an amount of remaining bandwidth allocated to a specific path P_r with an amount of bandwidth required for a call requesting new connection setup input to the corresponding ingress edge node (Paragraph [0033], lines 3-9), and predicting an amount of additional bandwidth to be requested from the bandwidth broker when the amount of the remaining bandwidth does not satisfy the amount of the bandwidth required for the connection setup requesting call (Paragraph [0033], lines 9-13); and

c) requesting additional bandwidth from the bandwidth broker on the basis of the predicted amount of the additional bandwidth, changing bandwidth information of the corresponding path P_r , and performing connection admission control (Paragraph [0035]).

Regarding claim 2, Zhang et al. teach the adaptive connection admission control method according to claim 1, further comprising the step of d) decreasing the

amount of additionally allocated bandwidth when the amount of the additionally allocated bandwidth is not exhausted within a certain range, and returning the decreased amount of the additionally allocated bandwidth to the bandwidth broker (Paragraph [0041]).

Regarding claim 3, Zhang et al. teach the adaptive connection admission control method according to claim 2, wherein the step d) comprises the steps of:

comparing an amount of bandwidth $UBW_{sub.i}$ being used at current time $T_{sub.i}$ of the amount of the additionally allocated bandwidth with an amount of bandwidth $UBW_{sub.i-1}$ actually used at previous time $T_{sub.i-1}$ (Paragraph [0044] and Fig. 5); and

decreasing an amount of currently available bandwidth $BW_{sub.i}$ of the corresponding path P_r when a difference between the amount of the bandwidth $UBW_{sub.i}$ and the amount of the bandwidth $UBW_{sub.i-1}$ is equal to or greater than a preset threshold (When bandwidth I is greater than bandwidth $I-1$, the path is not characterized as critical. Paragraph [0044] and Fig. 5).

Regarding claim 4, Zhang et al. teach the adaptive connection admission control method according to claim 3, wherein the amount of the currently available bandwidth $BW_{sub.i}$ of the corresponding path P_r is decreased to the amount of the bandwidth $UBW_{sub.i-1}$ actually used at the previous time $T_{sub.i-1}$ (Paragraph [0044] and Fig. 5).

Regarding claim 5, Zhang et al. teach the adaptive connection admission control method according to claim 2, further comprising the step of the bandwidth broker

withdrawing the decreased amount of the additionally allocated bandwidth and allocating the decreased amount of the additionally allocated bandwidth to another path (The decreased amount of bandwidth is going to be distributed within all other paths which were taken from initially. Paragraph [0044] and Fig. 5).

Regarding claim 6, Zhang et al. teach the adaptive connection admission control method according to claim 1, wherein the step a) comprises the steps of:

determining each of paths between the ingress and egress edge nodes within the DiffServ network using a routing protocol (It is inherent that DiffServ operates on the principle of traffic classification which is taught by Zhang et al., where each data packet is placed into a limited number of traffic classes, rather than differentiating network traffic based on the requirements of an individual flow);

the bandwidth broker determining an amount of initial bandwidth for each path and reporting the determined amount of the initial bandwidth for each path to the ingress edge node (Paragraph [0008]);

selecting the path P_r using a destination address when the call requesting new connection setup is input to the ingress edge node (It is inherent that layer 3 devices use IP address/ routing table in order to perform routing. Paragraph [0035]); and

accepting the connection setup request when the amount of the remaining bandwidth, which is allocated to the selected path P_r and is currently available, is greater than the amount of the bandwidth required for the connection setup requesting call (Paragraph [0044]).

Regarding claim 8, Zhang et al. teach the adaptive connection admission control method according to claim 1, wherein the step b) is performed so that, when the amount of the remaining bandwidth satisfies the amount of the bandwidth required for the connection setup requesting call, the bandwidth information of the corresponding path P_r is changed as expressed in the following Equation (Paragraph [0039] and [0041]).

amount of remaining bandwidth of P_r = amount of remaining bandwidth of P_r - amount of bandwidth required for new call (Paragraph [0041]).

Regarding claim 9. Zhang et al. teach the adaptive connection admission control method according to claim 1, wherein the step c) comprises the steps of:

the ingress edge node requesting the bandwidth broker to allocate the additional bandwidth predicted depending on the state of the input call (Paragraph [0036]);

the bandwidth broker receiving the request, determining whether to accept the request for the allocation of the additional bandwidth depending on states of links through which the corresponding path P_r passes (Paragraphs [0036] and [0037]);

the ingress edge node receiving a response to the request for the allocation of the additional bandwidth from the bandwidth broker and determining whether allocation of the additional bandwidth succeeds ([0008], Fig. 7); and

rejecting the connection setup request if the allocation of the additional bandwidth fails, while changing the bandwidth information of the corresponding path P_r

and accepting the connection setup request if the allocation of the additional bandwidth succeeds (Paragraphs [0048] and [0049]).

Regarding claim 10, Zhang et al. teach the adaptive connection admission control method according to claim 9, wherein the bandwidth information of the corresponding path P_r is changed as expressed in the following equation (Paragraphs [0036] and [0037]).

amount of remaining bandwidth of $P_r = (\text{amount of remaining bandwidth of } P_r + M') - \text{amount of bandwidth required for new call}$ (Examiner assumed "M'" as additional bandwidth. Paragraphs [0036] and [0037]).

Allowable Subject Matter

7. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Zhang et al. (US Patent Publication No. 2003/0028641) teach the adaptive connection admission control method according to claim 1, wherein the step b) is performed so that the amount of the additional bandwidth M' to be requested. However, claim 7 appears to be novel and inventive because prior art of record fail to teach the following Equation:

$$2 M' = BW (i + 1) = UBW_i - UBW_{i-1} T_i - T_{i-1} t t = k = 0 i T k - T k - 1 i - 1$$

where $T_{sub.i}$: time when i -th allocation of additional bandwidth is requested,
 $BW_{sub.i}$: the amount of bandwidth allocated at time $T_{sub.i}$, $UBW_{sub.i}$: the amount of actually used bandwidth of the amount of the bandwidth allocated at time $T_{sub.i}$, and
 Δt : average of time intervals at which the allocation of the additional bandwidth is requested from the bandwidth broker.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chen et al. (US Patent No. 6,487,170) teach providing admission control and network quality of service with a distributed bandwidth broker.

Liao et al. (US Patent Publication No. 2004/0136379) teach method and apparatus for allocation of resources.

9. Any responses to this Office Action should be **faxed** to (571) 273-8300 or **mailed** to:

Commissioner for Patent
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nima Mahmoudzadeh whose telephone number is (571)

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270-3527. The examiner can normally be reached on Monday - Friday 7:30am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benny Q. Tieu can be reached on (571) 272-7490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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